The present invention also provides for an interrupt switch that can accommodate an appliance with a varying load cycle. An example of such an appliance is a washing machine, which applies higher electric loads during the wash and spin cycles, and lower electric loads during the fill and drain cycles. The interrupt switch 20 could have a power request button (not shown) that requests a reserve of power sufficient to allow the appliance with the variable loads to complete a cycle without applying a load that can trip the circuit breaker. The power request button instructs the generator monitor 10 to lower the reference outputs used in the calculation of some or all GAP levels. This reduction is equal to the maximum load applied by the appliance during its operating cycle. The power request causes the reduction in the reference outputs to continue for a time period equal to or greater than the appliance operating cycle. By reducing the reference outputs, the power is essentially denied to the other appliances on interrupt switches and subtracted from the GAP levels shown on the user displays, explained in detail below. This reduction in reference outputs therefore reserves the power needed by the appliance with the variable cycle. The appliance maximum loads could be measured by the interrupt switch, set manually by the user, or determined and preset by the manufacturer. Manufacturers of such appliances could also incorporate this feature into the on off switch of the appliance, allowing both functions to be implemented with the same switch. When a user wanted to operate the appliance, he pushes the power request button and turns on the appliance. The interrupt switch keeps the power to the appliance interrupted until it detects a GAP level sufficient to support the maximum load of the appliance. Upon detecting a sufficient GAP level, the interrupt switch sends the power request to the generator monitor and returns power to its appliance. Given the appliance has also been turned on, it begins its load cycle. Given this appliance operates at various load levels during the cycle, interrupt switches for this type of appliance do not incorporate the feature of interrupting power when the load is lower than the maximum continuous load observed. This embodiment of the interrupt switch for appliances with varying load cycles could either keep the switch closed until it notices no load from the appliance, or for an observed or set time period sufficient to allow for the completion of the appliance cycle.

An alternative embodiment of the system for the power request feature incorporates an extension to the length of the requested power reduction. The extended time period is sufficient for both the appliance cycle and for an initial system adjustment. For example, a washing machine with a 30 minute cycle might have its interrupt switch set to request a reduction in reference outputs for 45 minutes. The extra 15 minutes is intended for the other appliances and interrupt switches in the system to adjust to the lowered reference outputs prior to the start of the variable cycle appliance. The interrupt switch on the appliance closes within the set waiting period, provided enough appliances cycle off to allow the GAP level, to which the interrupt switch 20 is assigned, to increase to a level greater than the load identified for the appliance cycle. The interrupt switch transmitting the request needs to be monitoring a GAP level that is not affected by the power request, as doing so allows the appliance to take advantage of the power being reserved. This system provides a set time period for reducing the reference outputs regardless of how long it takes for the other devices in the system to adjust. For instance, assume the GAP levels are sufficient to support the appliance as soon as the power request button is pressed. In the example any time added to the duration of the appliance cycle when setting the power request duration, is essentially a waste of generator capacity. An additional decision process to address this potential waste can be to have the interrupt switch report a canceling of the power request after the appliance finishes the cycle. The end of the cycle can either be determined by a set time after the initial load was applied, or at the time when the power drawn through the interrupt switch is equal to zero.

To address the situation where low priority interrupt switches may interrupt power for extended periods, due to low GAP levels, a modified wait sequence could be applied. An interrupt switch 20 is programmed with a threshold period that is deemed unacceptable for the appliance to be without power. This could be any extended time period ranging from several minutes to a few hours. The threshold period could be a standard period considered appropriate for appliances in general or set for each appliance on the supporting interrupt switch. Once the interrupt switch 20 had remained open for this time period, it can execute a different and shorter wait period when it sensed an increase in GAP levels. This shortened wait period allows a low priority appliance that has been

held without power for the extended period, access to an increased GAP level ahead of the higher priority appliances. One of many sequencing possibilities is to have all interrupt switches wait an initial time period followed by waiting the priority controlled time period. This initial time period that all interrupt switches normally wait can be a window of opportunity for the interrupt switch 20 that has been open for a time equal to or greater than the threshold period. As an example of this embodiment of the invention, assume the threshold time period is two hours. Further assume the initial time period is 10 seconds and that the wait period T3 is two seconds. The priority wait periods are calculated with the following equation or process:

10 Seconds + (T3 x Priority) = wait period

The wait period for interrupt switch 20, priority 1, is calculated as follows:

10 Seconds + (2 Seconds x 1) = 12 Seconds

The wait period for interrupt switch 20, priority 2, is calculated as follows:

10 Seconds + (2 Seconds x 2) = 14 Seconds

Following this process, the wait period for interrupt switch 20, priority 8 is calculated as follows:

10 Seconds + (2 Seconds x 8) = 26 Seconds

This wait period calculation, causes each interrupt switch 20 to be spaced 2 seconds apart after all interrupt switches wait the initial 10 seconds. Any interrupt switch 20, holding its appliance disabled for a period longer than the threshold period, evaluates the GAP levels and if sufficient, returns power to the appliance within the initial 10-second wait period. To continue this example of the present invention, if interrupt switch 20 with priority 8 is held interrupted for more than the threshold period, the interrupt switch 20